

# **Summary of OU2 Monitoring**

**November 1998**

**Syntex Agribusiness, Inc.  
Verona Remediation Site**

3.D

40292389



Superfund

**12 April 1999**

**Summary of OU2 Monitoring  
Syntex Agribusiness, Inc.  
Verona Remediation Site  
November 1998**

**Table of Contents**

<u>Section</u>		<u>Page</u>
1	Introduction .....	1
1.1	Monitor Dates .....	2
1.2	Contractor Information.....	2
2	Quality Assurance/Quality Control .....	3

**List of Tables**

Table 1	Volatile Organic Compounds .....	4 (Pages 1A - 1C)
Table 2	Semivolatile Organic Compounds .....	5 (Pages 1A - 1C)
Table 3	Pesticides and PCBs .....	6 (Pages 1A - 1C)
Table 4	2,3,7,8-TCDD .....	7 (Pages 1A - 1C)
Table 5	Cations, Anions, TOC, and Phenol.....	8 (Pages 1A - 1C)

**Summary of OU2 Monitoring  
Syntex Agribusiness, Inc.  
Verona Remediation Site**

**1. Introduction**

**Groundwater Monitoring**

The following information summarizes the groundwater monitoring activities that were completed by Syntex Agribusiness, Inc., at the Verona, Missouri Remediation Site in accordance with the requirements specified in the Order on Consent for Operable Unit Number 2 (OU-2) (T30Ab).

The following monitoring wells and Spring River locations were sampled:

IS-6	MW-15B
MW-04	MW-16
MW-05	MW-16B
MW-07	MW-21
MW-09	MW-22
MW-15	North-River
MW-15A	South-River

## 1.1 Monitoring Dates

The quarterly groundwater monitoring activities for OU-2 were initiated on November 3, 1998 and were completed on November 6, 1998. All groundwater monitoring activities were completed in accordance with the requirements specified in the "OU-2 Implementation Plan - Sampling and Analysis Plan".

## 1.2 Contractor Information

Groundwater Monitoring = SECOR Environmental Engineering  
1340 West Battlefield, Suite 103  
Springfield, MO 65708

Technicians = Ben Franka, Lori Young

Laboratory Analysis = Southwest Laboratory of Oklahoma, Inc.  
1700 West Albany  
Broken Arrow, OK 74012

Quanterra, Inc.  
13715 Rider Trail North  
Earth City, MO 63045

## **2.0 Quality Assurance/Quality Control**

The analytical testing was completed in accordance with the procedures specified in the "OU-2 Implementation Plan - Quality Assurance Plan".

# **Table 1**

**Summary of OU2 Monitoring Data**

**Volatile Organic Compounds**

**TABLE 1**  
**Summary of OU2 Monitoring Data**  
**Volatile Organic Compounds**  
**DuCoa Facility - Verona, Missouri**

Page: 1A of 1C  
 Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	IS-6	MW-04	MW-05	MW-06	MW-07	MW-08
	SAMPLE ID	SEL8344	SEL8347	SEL8354	SEL8356	SEL8348	SEL8355
DATE	11/03/98	11/04/98	11/06/98	11/09/98	11/04/98	11/06/98	11/06/98
RESULT TYPE	Primary Set 1						
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5
1,4-Dioxene	<600	<600	<600	<600	<600	<600	<600
Acetone	<10	<10	<10	<10	<10	<10	<10
Chlorobenzene	<5	<5	15	91	<5	<5	14
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<10#	<10#	6#	7#	<10#	<10#	<10#
Tetrachloroethene	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	18	<5	<5	<5

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed  
 # = Constituent in more than one test method, highest result reported.

**TABLE 1**  
**Summary of OU2 Monitoring Data**  
**Volatile Organic Compounds**  
**DuCoa Facility - Verona, Missouri**

Page: 1B of 1C

Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE SAMPLE ID	MW-09	MW-15	MW-15	MW-15A	MW-15B	MW-16
		SEL8368	SEL8349	SEL8357	SEL8360	SEL8353	SEL8352
		DATE	11/06/98	11/04/98	11/04/98	11/05/98	11/05/98
	RESULT TYPE	Duplicate 1 Set 1	Primary Set 1	Split 1 Set 1	Primary Set 1	Primary Set 1	Primary Set 1
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
1,4-Dioxane		<500	<500	<500	<500	<500	<500
Acetone		<10	<10	22	<10	<10	<10
Chlorobenzene		24	<5	<5	<5	19	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Methylene chloride		<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene		<10#	<10#	<10#	<10#	<10#	<10#
Tetrachloroethane		<5	<5	<20	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5

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**TABLE 1**  
**Summary of OU2 Monitoring Data**  
**Volatile Organic Compounds**  
**DuCoa Facility - Verona, Missouri**

Page: 1C of 1C

Date: 04/09/99

CONSTITUENT (Units in µg/l)	SITE	MW-188	MW-21	MW-22	N-RIVER	S-RIVER
	SAMPLE ID	SEL8351	SEL8346	SEL8346	SEL8370	SEL8371
	DATE	11/05/98	11/03/98	11/03/98	11/06/98	11/06/98
RESULT-TYPE	Primary Set 1					
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5
1,4-Dioxane	<500	<500	<500	<500	<500	<500
Acetone	<10	<10	<10	<10	<10	<10
Chlorobenzene	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5
Methylene chloride	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	<10#	<10#	<10#	<10#	<10#	<10#
Tetrachloroethene	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	<5	<5	<5

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## Table 2

Summary of OU2 Monitoring Data  
Semivolatile Organic Compounds

**TABLE 2**  
**Summary of OU2 Monitoring Data**  
**Semivolatile Organic Compounds**  
**DuCoa Facility - Verona, Missouri**

Page: 1A of 1C

Date: 04/09/99

CONSTITUENT (Units in $\mu\text{g/l}$ )	SITE:	IS-8	MW-04	MW-05	MW-06	MW-07	MW-09
	SAMPLE ID:	SEL8344	SEL8347	SEL8354	SEL8356	SEL8348	SEL8355
DATE	11/03/98	11/04/98	11/06/98	11/08/98	11/04/98	11/04/98	11/06/98
RESULT TYPE	Primary Set 1						
1,2,4,6-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10	<10
Hexachlorophene	<200	<200	<200	<200	<200	<200	<200
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10	<10	<10

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed

**TABLE 2**  
**Summary of OU2 Monitoring Data**  
**Semivolatile Organic Compounds**  
**DuCoa Facility - Verona, Missouri**

Page: 1B of 1C  
Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	MW-09	MW-16	MW-16	MW-16A	MW-16B	MW-16
	SAMPLE ID	SEL8358	SEL8349	SEL8367	SEL8350	SEL8353	SEL8352
DATE	11/06/98	11/04/98	11/04/98	11/05/98	11/05/98	11/05/98	11/05/98
RESULT TYPE	Duplicate 1 Set 1	Primary Set 1	Split 1 Set 1	Primary Set 1	Primary Set 1	Primary Set 1	Primary Set 1
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10	<10
Hexachlorophene	<200	<200	<100	<200	<200	<200	<200
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10	<10	<10

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**TABLE 2**  
**Summary of OU2 Monitoring Data**  
**Semivolatile Organic Compounds**  
**DuCoa Facility - Verona, Missouri**

Page: 1C of 1C

Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	MW-16B	MW-21	MW-22	N-RIVER	S-RIVER
	SAMPLE ID:	SEL8351	SEL8345	SEL8346	SEL8370	SEL8371
DATE	11/05/98	11/03/98	11/03/98	11/06/98	11/06/98	11/06/98
RESULT TYPE	Primary Set 1					
1,2,4,5-Tetrachlorobenzene	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10
Hexachlorophene	<200	<200	<200	<200	<200	<200
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10
Naphthalene	<10	<10	<10	<10	<10	<10

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed

## **Table 3**

**Summary of OU2 Monitoring Data**

**Pesticides and PCBs**

**TABLE 3**  
**Summary of OU2 Monitoring Data**  
**Pesticides and PCBs**  
**DuCoa Facility - Verona, Missouri**

Page: 1A of 1C  
Date: 04/09/99

CONSTITUENT (Units, in $\mu\text{g/l}$ )	SITE SAMPLE ID.	IS-6	MW-04	MW-05	MW-06	MW-07	MW-09
		SEL8344	SEL8347	SEL8354	SEL8358	SEL8348	SEL8355
	RESULT TYPE	Primary Set 1					
Aroclor 1242		<1	<1	<1	<1	<1	<1
Heptachlor		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Heptachlor epoxide		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04

Values represent total concentrations unless noted    < =Not detected at indicated reporting limit    --- =Not analyzed

**TABLE 3**  
**Summary of OU2 Monitoring Data**  
**Pesticides and PCBs**  
**DuCoa Facility - Verona, Missouri**

Page: 1B of 1C

Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	MW-09	MW-15	MW-15	MW-15A	MW-15B	MW-16
	SAMPLE ID	SEL8358	SEL8349	SEL8357	SEL8350	SEL8353	SEL8352
DATE	11/06/98	11/04/98	11/04/98	11/05/98	11/05/98	11/05/98	11/05/98
RESULT-TYPE	Duplicate 1 Set 1	Primary Set 1	Split 1 Set 1	Primary Set 1	Primary Set 1	Primary Set 1	Primary Set 1
Aroclor 1242	<1	<1	<1	<1	<1	<1	<1
Heptachlor	<0.04	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04
Heptachlor epoxide	<0.04	<0.04	<0.05	<0.04	<0.04	<0.04	<0.04

**TABLE 3**  
**Summary of OU2 Monitoring Data**  
**Pesticides and PCBs**  
**DuCoa Facility - Verona, Missouri**

Page: 1C of 1C

Date: 04/09/99

CONSTITUENT (Units: in ug/l)	SITE	MW-16B	MW-21	MW-22	N-RIVER	S-RIVER
	SAMPLE ID	SEL8351	SEL8346	SEL8348	SEL8370	SEL8371
DATE	11/05/98	11/03/98	11/03/98	11/06/98	11/06/98	11/06/98
RESULT TYPE	Primary Set 1					
Aroclor 1242	<1	<1	<1	<1	<1	<1
Heptachlor	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Heptachlor epoxide	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed

## Table 4

Summary of OU2 Monitoring Data

2,3,7,8 - TCDD

**TABLE 4**  
**Summary of OU2 Monitoring Data**  
**2,3,7,8-TCDD**  
**DuCoa Facility - Verona, Missouri**

Page: 1A of 1C

Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	IS-6	MW-04	MW-05	MW-06	MW-07	MW-09
	SAMPLE ID	SEL8344	SEL8347	SEL8354	SEL8356	SEL8348	SEL8366
DATE	11/03/98	11/04/98	11/06/98	11/09/98	11/04/98	11/06/98	11/06/98
RESULT TYPE	Primary Set 1						
Dioxin		<.00009	<.00009	<.00007	<.00005	<.00009	<.0005

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed

**TABLE 4**  
**Summary of OU2 Monitoring Data**  
**2,3,7,8-TCDD**  
**DuCoa Facility - Verona, Missouri**

Page: 1B of 1C  
Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	MW-09	MW-16	MW-16	MW-16A	MW-16B	MW-16
	SAMPLE ID	SEL8358	SEL8349	SEL8357	SEL8350	SEL8353	SEL8352
DATE	11/06/98	11/04/98	11/04/98	11/05/98	11/05/98	11/05/98	11/05/98
RESULT TYPE	Duplicate 1 Set 1	Primary Set 1	Split 1 Set 1	Primary Set 1	Primary Set 1	Primary Set 1	Primary Set 1
Dioxin		<.0005	<.00007	<0.010	<.0006	<.0005	<.0006

Values represent total concentrations unless noted    < =Not detected at indicated reporting limit    ---=Not analyzed

**TABLE 4**  
**Summary of OU2 Monitoring Data**  
**2,3,7,8-TCDD**  
**DuCoa Facility - Verona, Missouri**

Page: 1C of 1C  
Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	MW-16B	MW-21	MW-22	N-RIVER	S-RIVER
	SAMPLE ID	SEL8351	SEL8345	SEL8346	SEL8370	SEL8371
DATE	11/05/98	11/03/98	11/03/98	11/06/98	11/06/98	
RESULT TYPE	Primary Set 1					
Dioxin		<.0006	<.00009	<.0001	<.00007	<.0005

Values represent total concentrations unless noted    < =Not detected at indicated reporting limit    ---=Not analyzed

## **Table 5**

**Summary of OU2 Monitoring Data  
Cations, Anions, TOC and Phenol**

**TABLE 5**  
**Summary of OU2 Monitoring Data**  
**Cations, Anions, Total Organic Carbon, and Phenol**  
**DuCoa Facility - Verona, Missouri**

CONSTITUENT (Units in ug/l)	SITE	IS-8	MW-04	MW-05	MW-06	MW-07	MW-09
	SAMPLE ID	SEL8344	SEL8347	SEL8354	SEL8366	SEL8348	SEL8355
	DATE	11/03/98	11/04/98	11/06/98	11/09/98	11/04/98	11/06/98
RESULT TYPE	Primary Set 1						
Antimony	<4.0	<4.0	<4.0	<20.0	<4.0	<4.0	<4.0
Arsenic	10.1	16.6	10.7	31.2	40.2	35.8	
Barium	1180	321	1530	1340	1430	881	
Cadmium	3.70	<3	<3.0	<3	3.50	<3	
Calcium	313000	49100	67800	77700	86000	60000	
Chloride	10200	30300	78200	233000	36800	145000	
Chromium	53.0	<5	<5.0	<5.0	11.3	<5	
Iron	46800	13800	21000	35400	66500	33400	
Lead	146	13.0	12.6	14.6	81.6	22.9	
Magnesium	5240	3720	5170	9340	7650	4280	
Manganese	14400	4890	6830	4120	23400	4980	
Nitrate	210	<100	110	<200	<100	160	
Phenol	<10	<10	<10	<10	<10	<10	
Selenium	<20.0	<4.0	<4.0	<4.0	<4.0	<4.0	
Sodium	9250	19700	25400	30600	12100	27600	
Sulfate	19200	11200	17100	470	4700	920	
TOC	<1000	<1000	<2000	<1000	<1000	<1000	

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed

**TABLE 5**  
**Summary of OU2 Monitoring Data**  
**Cations, Anions, Total Organic Carbon, and Phenol**  
**DuCoa Facility - Verona, Missouri**

Page: 1B of 1C  
Date: 04/09/99

CONSTITUENT (Units in:ug/l)	SITE	MW-09	MW-15	MW-15	MW-15A	MW-15B	MW-16
	SAMPLE ID	SEL8358	SEL8349	SEL8357	SEL8350	SEL8353	SEL8352
DATE	11/06/98	11/04/98	11/04/98	11/06/98	11/06/98	11/06/98	11/05/98
RESULT TYPE	Duplicate 1 Set 1	Primary Set 1	Split 1 Set 1	Primary Set 1	Primary Set 1	Primary Set 1	Primary Set 1
Antimony	<4.0	<4.0	<60	<4.0	<4.0	<4.0	<4.0
Arsenic	34.6	<4.0	<10	4.80	31.4	<8.0	<8.0
Barium	717	636	271	694	802	70.4	
Cadmium	<3	<3	<6	<3	<3	<3	<3
Calcium	57800	869000	199000	69200	64000	128000	
Chloride	140000	29000	20900	29700	76800	2000	
Chromium	<6	<6.00	38.6	<5	<6	<6	
Iron	25200	3240	20300	9790	15800	2830	
Lead	4.7	132	37.7	20.4	8.20	18.0	
Magnesium	4100	10500	11900	6950	8620	21600	
Manganese	3690	7500	1880	6900	3270	822	
Nitrate	280	<100	<50	<100	<100	<100	<100
Phenol	<10	<10	<64#	<10	<10	<10	<10
Selenium	<4.0	<4.0	<5	<4.0	<4.0	<4.0	<4.0
Sodium	26900	3480	<5000	12400	17700	6730	
Sulfate	200	14200	9010	9000	1800	11600	
TOC	<1000	<1000	3080	<1000	<2000	<1000	

Values represent total concentrations unless noted    < =Not detected at indicated reporting limit    ---=Not analyzed  
# =Constituent in more than one test method, highest result reported.

**TABLE 5**  
**Summary of OU2 Monitoring Data**  
**Cations, Anions, Total Organic Carbon, and Phenol**  
**DuCoa Facility - Verona, Missouri**

Page: 1C of 1C  
Date: 04/09/99

CONSTITUENT (Units in ug/l)	SITE	MW-18B	MW-21	MW-22	N-RIVER	S-RIVER
	SAMPLE ID	SEL8351	SEL8345	SEL8348	SEL8370	SEL8371
DATE	11/05/98	11/03/98	11/03/98	11/06/98	11/06/98	11/06/98
RESULT TYPE	Primary Set 1					
Antimony		<4.0	<4.0	<4.0	<4.0	<4.0
Arsenic		<4.0	<4.0	27.8	<4.0	<4.0
Barium		40.2	107	532	55.6	49.8
Cadmium		<3	<3	<3	<3	<3
Calcium		56600	69300	67800	65400	63300
Chloride		3300	18400	16500	14900	12000
Chromium		<5	27.4	<5	<5	<5
Iron		1060	1370	23000	<100	<100
Lead		4.80	6.60	24.6	<3.0	<3.0
Magnesium		4760	2840	3230	2910	2490
Manganese		268	778	3140	41.9	8.5
Nitrate		180	200	360	2800	2900
Phenol		<10	<10	<10	<10	<10
Selenium		<4.0	<4.0	<4.0	<4.0	<4.0
Sodium		8100	6890	7710	7040	5040
Sulfate		4800	7800	4000	3900	3100
TOC		<1000	<1000	<1000	<1000	<1000

Values represent total concentrations unless noted    < = Not detected at indicated reporting limit    --- = Not analyzed